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IS 15197 (2002): Kerosene Heating Lamp for use in School and College Laboratories [PGD 22: Educational Instruments and Equipment]

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Indian Standard

KEROSENE HEATING LAMP FOR USE IN SCHOOL AND COLLEGE LABORATORIES — SPECIFICATION

ICS 03.180; 71.040.10

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 2002

Price Group 3

Educational Instruments and Equipment Sectional Committee, BP 22

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards after the draft finalized by the Educational Instruments and Equipment Sectional Committee had been approved by the Basic and Production Engineering Division Council.

The kerosene heating lamp are used in schools and colleges especially in chemical laboratories while carrying out various experiments.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

KEROSENE HEATING LAMP FOR USE IN SCHOOL AND COLLEGE LABORATORIES — SPECIFICATION

1 SCOPE

This standard covers the general requirements of kerosene heating lamp (as versatile and cheaper substitute of spirit lamp) which may be used in school laboratories as a source of heat.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
513 : 1994	Cold rolled low carbon steel sheets and strips (*fourth revision*)
1285 : 1975	Wrought aluminium alloy and aluminium alloy extruded round tube and hollow sections (for general engineering purposes) (*second revision*)

3 TERMINOLOGY

3.1 For the purpose of this standard, terminology and nomenclature as indicated in Fig. 1 and 2 in addition to the following shall apply.

3.1.1 *Kerosene Container* — It is a small fuel reservoir (200 ml nominal capacity) made of mild steel sheet.

3.1.2 *Kerosene Container Lid* — The metallic lid of the kerosene container with the provision to hold four pieces of ebonite/bakelite insulators. Each ebonite/bakelite insulator fitted inside with the wick holder.

3.1.3 *Wick Holders* — The small metallic pipes fixed between container lid and the sleeve holding base.

3.1.4 *Sleeves Holding Base* — A mild steel sheet base with provision to hold the inner and outer sleeves.

3.1.5 *Spacer* — The small metallic pipe pieces as spacers between sleeves holding base and insulators.

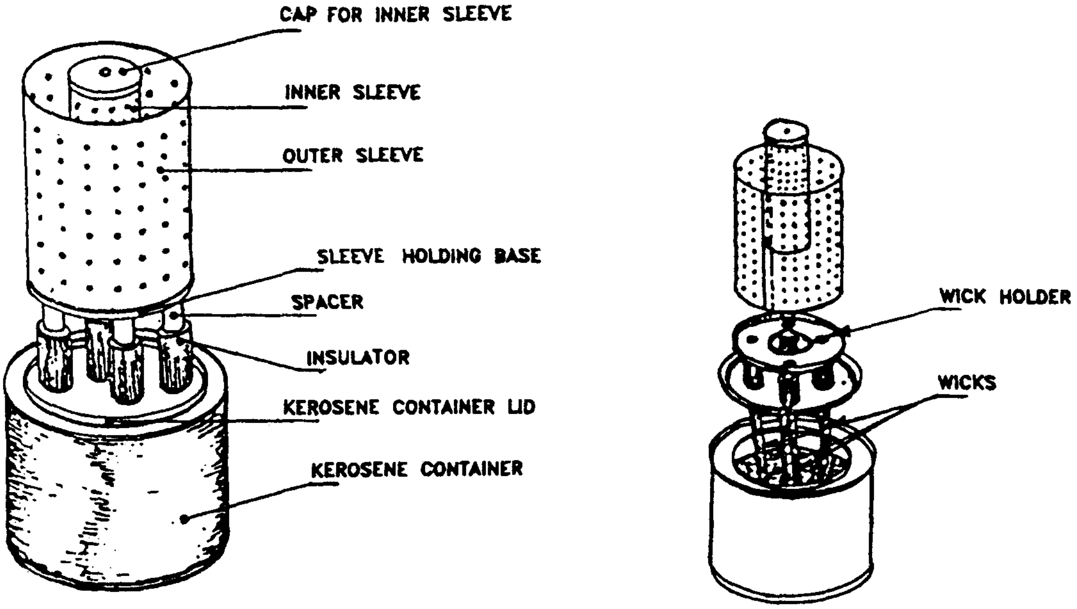
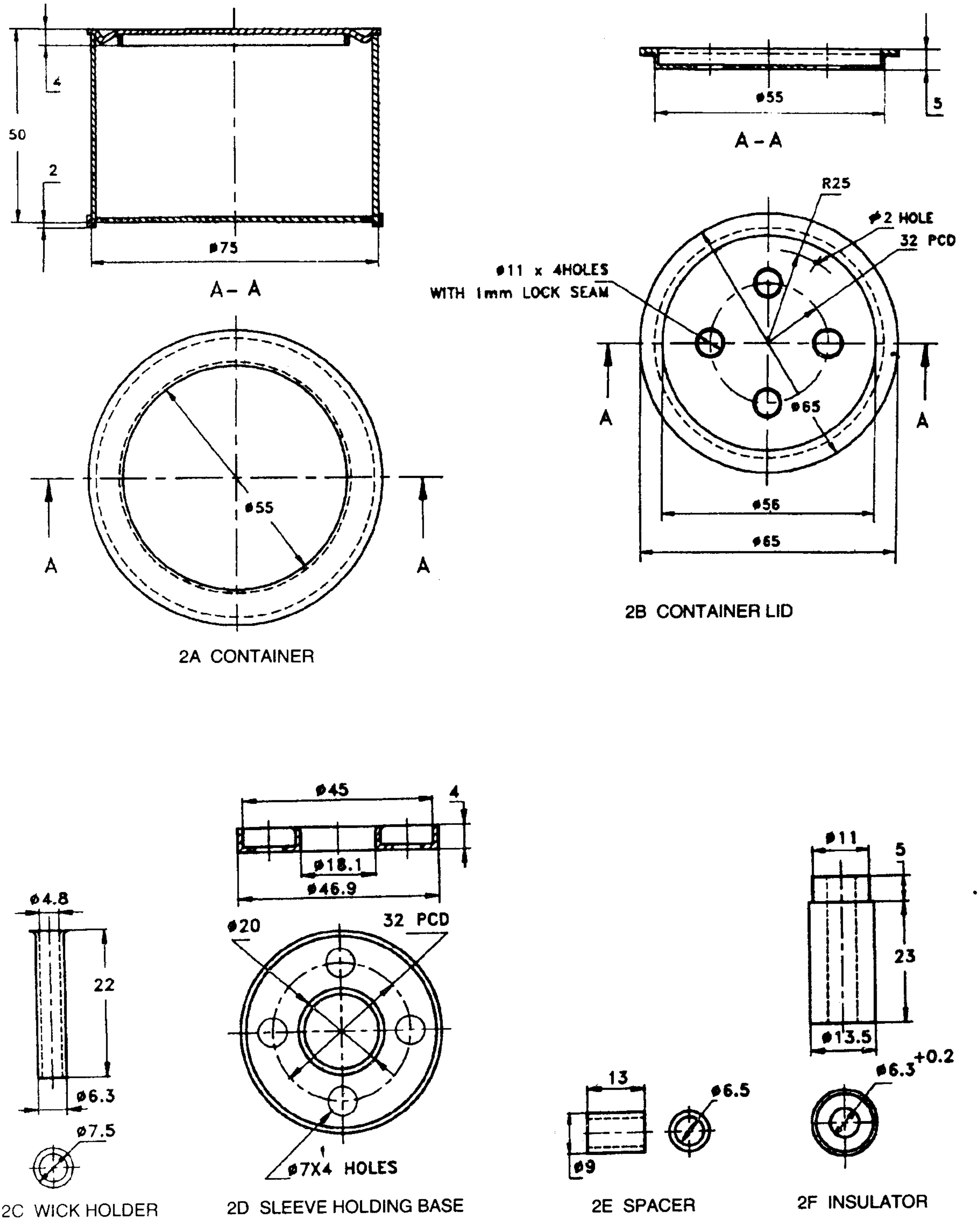


FIG. 1 NOMENCLATURE OF VARIOUS PARTS OF KEROSENE HEATING LAMP



2A CONTAINER

2B CONTAINER LID

2C WICK HOLDER

2D SLEEVE HOLDING BASE

2E SPACER

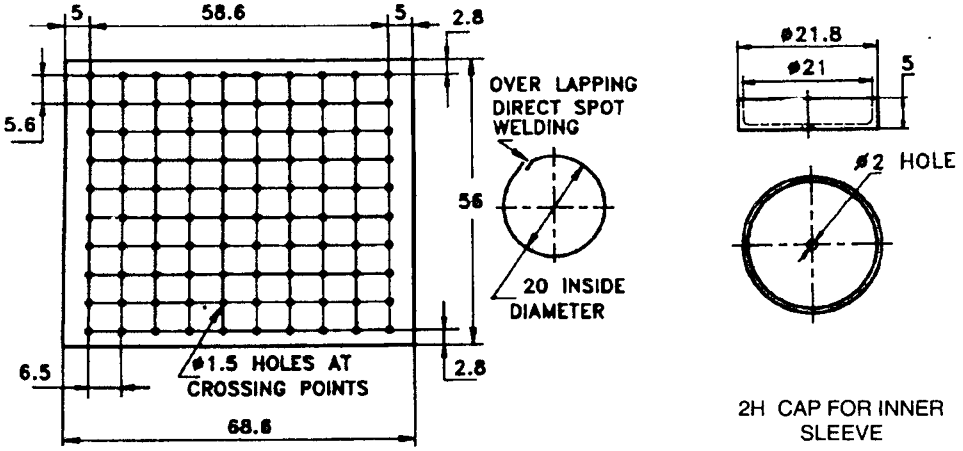
2F INSULATOR

All dimensions in millimetres.

FIG. 2 KEROSENE HEATING LAMP—DIMENSIONS (*Continued*)

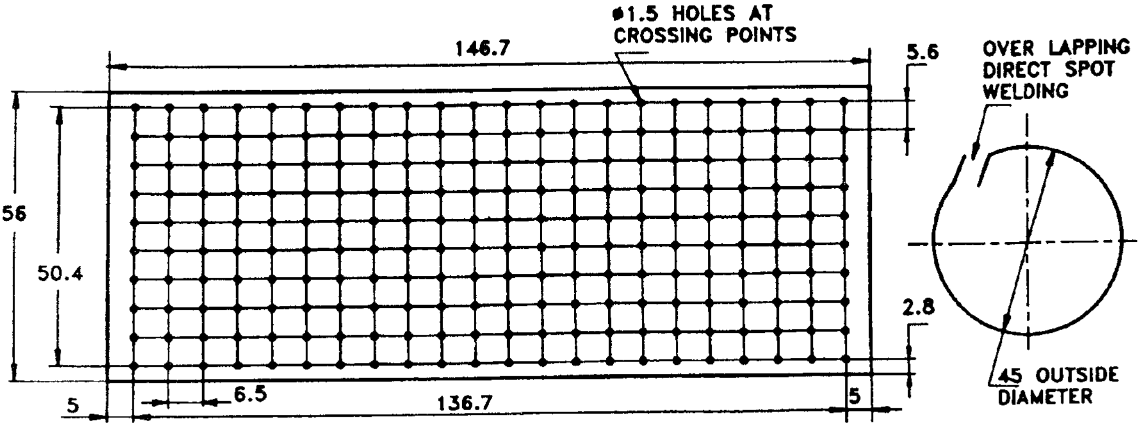
3.1.6 *Insulators* — The small pieces of ebonite/bakelite pipe (bad conductor of heat) as spacers between the lid and the sleeves holding base.

3.1.7 *Inner Sleeve* — A perforated mild steel sheet shaped by wrapping round a cylinder which help to control flame.


5
58.6
5
2.8
5.6
56
OVER LAPPING DIRECT SPOT WELDING
20 INSIDE DIAMETER
6.5
ø1.5 HOLES AT CROSSING POINTS
2.8
68.6
ø21.8
ø21
5
ø2 HOLE

2G INNER SLEEVE

2H CAP FOR INNER SLEEVE


ø1.5 HOLES AT CROSSING POINTS
146.7
5.6
OVER LAPPING DIRECT SPOT WELDING
56
50.4
2.8
45 OUTSIDE DIAMETER
5
6.5
136.7
5

2J OUTER SLEEVE

All dimensions in millimetres.

FIG. 2 KEROSENE HEATING LAMP—DIMENSIONS

3.1.8 *Cap for Inner Sleeve* — A small mild steel disc with hole in the centre to cover inner sleeve.

3.1.9 *Outer Sleeve* —A perforated mild steel sheet shaped by wrapping round a cylinder which help to control flame.

3.1.10 *Wicks* — The length of loosely woven cotton fibre used for drawing up kerosene oil.

4 MATERIAL

4.1 The sheet used in manufacturing the steel components shall be as specified in IS 513.

4.2 Aluminium alloy tube used in manufacturing the wick holders and spacers shall be as specified in IS 1285.

4.3 Insulators

Ebonite/Bakelite.

4.4 Wicks

Suitable loosely woven cotton fibre.

5 GENERAL REQUIREMENTS

5.1 Construction

The assembly of heating lamp shall be as shown in Fig. 1.

5.2 Dimensions

5.2.1 *Kerosene Container*

The dimensions of the container shall be as given in Fig. 2A. The thickness of steel sheet used shall be such that the finished thickness of the container shall not be less than 0.40 mm.

The capacity of the container shall not be less than 200 ml.

5.2.2 *Kerosene Container Lid*

The dimensions of container lid shall be as given in Fig. 2B. The thickness of steel sheet used shall be such that the finished thickness of container lid shall not be less than 0.50 mm.

5.2.3 *Wick Holders*

The kerosene heating lamp shall have four wick holders. The dimensions of the wick holders shall be as given Fig. 2C.

5.2.4 *Sleeves Holding Base*

The dimensions of the base shall be as given in Fig. 2D. The thickness of steel sheet used shall be such that the finished thickness of the base shall not be less than 0.90 mm.

5.2.5 *Spacers*

Four spacers shall be provided to hold the sleeves holding base, insulators and wick holders. The dimensions of spacer shall be as given in Fig. 2E.

5.2.6 *Insulators*

Four insulators shall be provided. The dimensions of the insulators shall be as given in Fig. 2F.

5.2.7 *Inner Sleeve*

The dimensions of the inner sleeve shall be as given in Fig. 2G. The inner sleeve shall be provided with a cap (*see* **5.2.8**). The thickness of steel sheet used shall be such that the finished thickness of the sleeve shall not be less than 0.40 mm.

5.2.8 *Cap for Inner Sleeve*

The dimensions of the cap for inner sleeve shall be as given in Fig. 2H. The thickness of steel sheet used shall be such that the finished thickness of the cap shall not be less than 0.40 mm.

5.2.9 *Outer Sleeve*

The dimensions of the outer sleeve shall be as given in Fig. 2J. The thickness of steel sheet used shall be such that the finished thickness of the sleeve shall not be less than 0.40 mm.

5.2.10 *Wicks*

Wicks shall be of suitable size to fit in the wick holder and shall be capable of being raised manually without undue tightness, shake or play.

5.3 Finish

5.3.1 The mild steel parts of the heating lamp shall be suitably painted/plated to avoid corrosion. The inside surface of the kerosene container shall also be made corrosion resistant by applying suitable anti-corrosive coating.

5.3.2 The wicks shall be suitably dressed with scissor to have uniform flame.

5.3.3 When in use the assembly shall be properly fitted and shall not have any sharp corners.

6 TESTS

6.1 The kerosene container shall be filled to its two-third capacity and the heating lamp shall be lit. After lighting up for 5 min ± 1 min the flame will be observed which shall not flicker or cause an increase in flame size or emission of visible smoke. A vessel filled up with water shall then be placed over the heating lamp for five minutes. After this test no unburnt carbon shall be seen deposited on the bottom of the vessel.

6.2 Stability Test

The kerosene heating lamp when full of fuel shall be put on a horizontal plane (with a provision of tilting). The plane with heating lamp shall be tilted by 15° from horizontal. The heating lamp may slide on the plane but shall not overturn.

The above test shall be repeated when the heating lamp is empty. the heating lamp may slide on the plane but shall not overturn.

6.3 Leakage Test

The fuel container shall be filled to its full capacity, wiped and kept on a paper for 4 h. There shall be no visible leakage either from the heating lamp/fuel container or on the paper

7 WORKING

7.1 More than half of the container has to be filled with kerosene. The outer sleeve then be removed for setting fire to four wicks. As the outer sleeve is placed back in position, the four flames combine into a bigger flame. The dimensions of the sleeves and number and size of holes on the inner and outer sleeves conform to the condition of a soot-free blue flame.

7.2 A small hole on the container lid allows trapped vapours in the container to escape.

7.3 The position and size of the wicks are to be checked before lighting the heating lamp. More than half of the container is to be filled with kerosene. The lighted heating lamp is to be put off only by covering the top of the outer sleeve with a metal or asbestos sheet.

8 MARKING

8.1 The kerosene heating lamp shall be legibly marked with the manufacturer's name, address and/or is recognized identification mark to be traced to manufacturer.

8.2 BIS Certification Marking

The product may also be marked with Standard Mark.

8.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act,* 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

9 Packing

The kerosene heating lamp shall be suitably packed to avoid any damage during transportation and handling.

Bureau of Indian Standards

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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